

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICANT : ARNTZEN, et al.  
SERIAL NO : CONT. of 09/676,734  
FILED : July 31, 2001  
TITLE : VACCINES EXPRESSED IN PLANTS  
  
Grp./A.U. : 1641  
Docket No. : P0245USF

**PRELIMINARY AMENDMENT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

This preliminary amendment is being concurrently filed with the continuation application of the above-identified case.

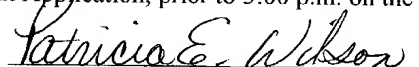
**IN THE SPECIFICATION**

At page 1, line 4, delete "This is a Continuation-in-Part application of U.S. Serial No. 08/026,393 filed March 4, 1993" and insert --This is a continuation of U.S. Serial No. 09/676,734 filed September 29, 2000, which is a continuation of U.S. Serial No. 09/111,330 filed July 7, 1998, which is a continuation of U.S. Serial No. 08/479,742 filed June 6, 1995, which issued as U.S. Patent No. 5,914,123, which is a divisional of U.S. Serial No. 08/026,393 filed March 4, 1993, which issued as U.S. Patent No. 5,612,487 March 18, 1997, and a continuation-in-part of copending PCT application Serial No.

=====

**CERTIFICATE OF MAILING**

I hereby declare that the attached Patent Application and filing fee has been mailed by U.S. Postal Service's "Post Office to Addressee" Express Mail service in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, Box Patent Application, prior to 5:00 p.m. on the 31 day of July, 2001.

  
Patricia E. Wilson  
Express Mail label EL745291157US

PCT/US94/02332 filed March 4, 1994 (designating the US) which is a continuation-in-part of copending application Serial No. 08/026,393 filed March 4, 1993, which issued as U.S. Patent No. 5,612,487, which itself is a continuation-in-part of Serial No. 07/750,049 filed August 26, 1991 (now abandoned). This application is also a continuation-in-part of application Serial No. 08/156,508 filed November 23, 1993, which issued as U.S. Patent No. 5,484,719 January 16, 1996. Applicants incorporate herein by reference the specification of each of the above-mentioned applications.--

### IN THE CLAIMS

Please cancel claims 73-100.

Please add the following new claims 101-115:

101.

A vector for transforming a plant comprising:  
a DNA sequence encoding a recombinant viral antigen protein, said protein being antigenic to an animal; and  
a plant functional promoter operably linked to said DNA sequence which directs expression of said protein in said plant.

102.

The vector of claim 101 wherein said vector is a plasmid vector.

103.

The vector of claim 101 wherein said vector is a viral vector.

104.

The vector of claim 101 wherein said antigen protein is from TGEV.

105.

A plasmid vector for transforming a plant comprising:  
A DNA sequence encoding a recombinant viral antigen protein, said protein being antigenic to a human or an animal; and  
a plant-functional promoter operably linked to said DNA sequence which directs the expression of said protein in said plant.

106.

The vector of claim 101 wherein said expression is preferentially directed to the seed of said plant.

107.

The vector of claim 101 wherein said vector is capable of achieving expression levels of 0.1% total soluble protein.

108.

The vector of claim 101 wherein said vector is capable of achieving expression levels of 0.05% total soluble protein.

109.

The vector of claim 101 wherein said vector is capable of achieving expression levels of 0.03% total soluble protein.

110.

The plasmid vector of claim 101 wherein said protein is chimeric by being fused to another peptide, polypeptide or protein such that expression of the protein is enhanced over levels of expression in absence of said fusion.

111.

The plasmid vector of claim 101 further comprising a translational enhancing sequence.

112.

The plasmid vector of claim 101 wherein the DNA encoding the viral antigen protein is truncated from the native wild type DNA sequence encoding said protein.

113.

The plasmid vector of claim 101 wherein the promoter preferentially expresses the viral antigen protein in an edible portion of the plant.

114.

The vector of claim 101 wherein said viral antigen protein is from TGEV.

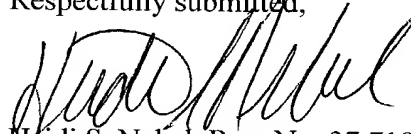
115.

The vector of claim 101 wherein said vector directs expression to the seed of said plant.

REMARKS

Applicants respectfully request that the foregoing preliminary amendment be made of record in the above identified case.

Respectfully submitted,



Heidi S. Nebel, Reg. No. 37,719  
ZARLEY, McKEE, THOMTE, VOORHEES  
& SEASE

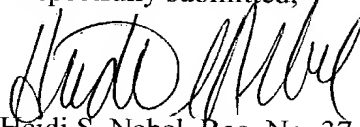
801 Grand Avenue, Suite 3200  
Des Moines, Iowa 50309-2721  
Phone No. (515) 288-3667  
Fax No. (515) 288-1338  
**CUSTOMER NO: 22885**

Attorneys of Record

- pw -

08/479,742 filed June 7, 1995) at Reel/Frame 8763/0450 on October 7, 1997.

Respectfully submitted,



Heidi S. Nebel, Reg. No. 37,719  
ZARLEY, McKEE, THOMTE, VOORHEES  
& SEASE

801 Grand Avenue, Suite 3200

Des Moines, Iowa 50309

Phone No. (515) 288-3667

Fax No. (515) 288-1338

**CUSTOMER NO: 22885**

Attorneys of Record



- pw -

